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IS 8153 (1986): Method for sensory evaluation of fresh fruits [FAD 10: Processed Fruits and Vegetable Products]



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Indian Standard
METHOD FOR
SENSORY EVALUATION OF FRESH FRUITS
(*First Revision*)

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BUREAU OF INDIAN STANDARDS
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Indian Standard

METHOD FOR SENSORY EVALUATION OF FRESH FRUITS (*First Revision*)

Sensory Evaluation Sectional Committee, AFDC 38

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Indian Standard
METHOD FOR
SENSORY EVALUATION OF FRESH FRUITS
(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 15 December 1986, after the draft finalized by the Sensory Evaluation Sectional Committee, had been approved by the Agricultural and Food Products Division Council.

0.2 Sensory evaluation provides basis for acceptance of fresh fruits by the consumers. The sensory quality of fruits is governed by many factors, such as varietal differences, climate, soil and other agronomic practices. Therefore, it is necessary to collect data and prescribe as clearly as possible the variations for each cultivator or required variety of the marketable fruits and draw descriptions of quality parameters for different grades. It is also necessary to collect information on the possible defects that reduce the quality of the fruits. Besides, collection of information on size and mass of the fruits should be considered as important factors in the marketing of the variety. This standard has been formulated to provide guidelines for sensory evaluation of fresh fruits in general. More precise descriptions of sensory evaluation will be taken up for various fruits separately.

0.3 This standard was first published in 1976. The present revision has been undertaken in the light of current trade practices in the country. Moreover in this revised version Table 1 and Table 2 have also been modified.

0.4 In the preparation of this standard considerable assistance has been derived from the research investigations carried out at the Central Food Technological Research Institute, Mysore.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Rules for rounding off numerical values (revised).

1. SCOPE

1.1 This standard prescribes method for sensory evaluation of fresh fruits by specifying quality grade descriptions and corresponding scores intended for lots ready and packed for despatch and sale.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 5126 (Part 1)-1969* and IS : 5126 (Part 2)-1969† shall apply.

3. GENERAL CONDITIONS

3.1 Laboratory Set-up — The laboratory set-up shall be as given in 4 of IS : 6273 (Part 1)-1971‡.

3.2 Lighting — The lighting in the testing area shall be as given in 4 of IS : 6273 (Part 1)-1971‡.

3.3 Time of Testing — The tests shall be carried out at least one hour before or after lunch.

3.3.1 Use of materials such as cigarettes, PAN and intoxicants by a panelist which are likely to vitiate results should have a time lapse of at least half-an-hour before the test. Use of strong odoriferous substances, such as cosmetics, flowers and hair oil should be avoided.

4. PANELISTS

4.1 Selection — The persons with normal sensitivity should be selected (*see* IS : 8140-1976§). They should be screened for the basic tastes and selected through sensory evaluation tests for sensitivity to variations in aroma, taste and texture of specified fruits.

4.2 Training — Selected panelists should be trained in the use of quality grade descriptions and in particular in the descriptive quality profile analysis [*see* IS : 6273 (Part 2)-1971||] of the variety of fruits to be evaluated.

4.3 Number of Panelists — At least 15 trained panelists should be employed in the evaluation so that at least 15 judgements are available to arrive at consistent and statistically valid results. (In case where 15-20 panelists are not available repeat evaluations should be carried out to get at least 15 judgements, the number of panelists not less than 5).

*Glossary of general terms for sensory evaluation of foods: Part 1 Methodology.

†Glossary of general terms for sensory evaluation of foods: Part 2 Quality characteristics.

‡Guide for sensory evaluation of foods: Part 1 Optimum requirements.

§Guide for selection of panel for sensory evaluation of foods and beverages.

||Guide for sensory evaluation of foods: Part 2 Methods and evaluation cards.

5. SAMPLING, PREPARATION AND PRESENTATION

5.1 Sampling — Samples shall be drawn at random (*see* IS : 4905-1968*) and sufficient quantity for the stipulated test.

5.2 Number of Samples — The trained panel should evaluate the samples singly and not more than 4 to 5 samples should be evaluated per session by fixing the quality grade for each of the parameters which can be translated to appropriate scores at the time of data analysis.

5.3 Coding — Coding of samples should be done according to 7.7 of IS : 6273 (Part 1)-1971†.

5.4 Serving of Test Sample — One sample should be given for test at a time. The sample should be served to different booths through a hatch.

6. PROCEDURE

6.1 Technique of Testing — The sensory testing should always start with the visual observation of the sample. The appearance should be evaluated first. The sample should be cut for evaluation of texture, taste and aroma.

6.2 Method — The method described in 4.2.8 of IS : 6273 (Part 2)-1971‡ should be followed.

6.3 Evaluation — The overall quality grading should be carried out as given in Table 1. and Table 2. The evaluation of individual quality attributes as described in Table 2 should be used for the different quality grades of selected parameters: viz colour, shape, size and texture of whole fruits; colour, appearance, texture, aroma and taste of cut fruits.

TABLE 1 OVERALL QUALITY GRADING OF FRESH FRUITS

Sl. No.	QUALITY GRADE	QUALITY DESCRIPTION	QUALITY SCORE	MARKET GRADE	USE STATUS
(1)	(2)	(3)	(4)	(5)	(6)
i)	Choice	Excellent	7	A ₁	} For counter sales
ii)	I	Very good	6	A	
		Good	5	A	
iii)	II	Satisfactory	4	B	
		Fair	3	B	

*Methods for random sampling.

†Guide for sensory evaluation of foods: Part 1 Optimum requirements.

‡Guide for sensory evaluation of foods: Part 2 Methods and evaluation cards.

TABLE 2 DESCRIPTION OF INDIVIDUAL QUALITY ATTRIBUTES — GRADEWISE

(Clause 6.3)

SL No.	QUALITY ATTRIBUTES	EXCELLENT	VERY GOOD	GOOD	SATISFACTORY	FAIR
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A) WHOLE FRUITS						
i)	Colour shape and size	*Typical, natural glossy, fresh uniform clear, no blemishes	*Typical, natural, glossy, fresh, slight non-uniformity few odd shapes or sizes	*Typical, natural, glossy, fresh, noticeable non-uniformity in colour, few odd shapes and sizes	*Typical, natural a little less glossy and fresh, with noticeable non-uniformity in colour, shape and size but not too distracting	Colour pale dull, slightly dry, noticeably non-uniformity in colour, shape and size and other defects
ii)	Texture (Finger feel)	Fresh and Firm for ordinary handling, no visible shrivelling damage to the skin or soft spots	Firm for ordinary handling, no surface damage	Firm for ordinary handling, a few blemishes of contact, soft/dull areas	Just noticeable softness or dryness in ordinary handling	Noticeable softness or leathery drying fruits approximately 10 percent
B) CUT FRUITS						
i)	Colour and appearance	*Typical and uniform, no defects	*Typical and uniform, no defects	*Typical with small variation, still good	*Typical, not very uniform	Non-uniform
ii)	Texture	Clear cut edges, fresh, firm, juicy, no defects	Clear cut edges fresh, firm, juicy, very slight non-uniformity but no serious defects	Cut edges fairly clear, flesh compact, juicy, slightly more non-uniformity but no detracting defects	Cut edges, a little fuzzy, flesh slightly soft, slightly thin, juicy, some defects such as fibre on area, hard spots, etc.	Cut edges not clear, flesh soft, juice thin, more noticeable defects

iii) Aroma	Typical of variety full intensity and balanced quality, no defects	Typical of variety, balanced quality but little less intensity, no defects	Mild aroma, but typical of variety with no defects	Mild aroma, slightly poor in quality with some dominant notes	Aroma intensity and quality is unbalanced but still clearly of variety
iv) Taste	Typical of variety, balanced in component tastes (sweetness, acidity, tartness, etc), no residual off-taste	Typical of variety, balanced in component tastes, a little less in intensity	Typical of variety, balanced but mild	Typical of variety, slightly unbalanced but still agreeable	Typical of variety, but unbalanced or small defects

*Typical — to be appropriately described for the particular variety of fruit being evaluated.

7. STATISTICAL EVALUATION OF RESULTS

7.1 The data of 1 to 3 sessions giving a total of atleast 15 judgements for each sample should be subjected to statistical analysis [*see* IS : 6273 (Part 3/Section 2)-1983*] to find significance of differences between the fruits and panel performance. If the panel performance is found satisfactory, the average of the scores for each sample should be converted into the quality grades.

*Guide for sensory evaluation of foods: Part 3 Statistical analysis of data, Section 2 Ranking and scoring tests (*first revision*).